

# ATLANTIC STATES MARINE FISHERIES COMMISSION

## REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR WEAKFISH  
*(Cynoscion regalis)*

2018 FISHING YEAR



Prepared by the Plan Review Team

Approved by the Weakfish Management Board  
October 2019

# WEAKFISH FMP REVIEW

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## I. Status of the Fishery Management Plan

The Atlantic States Marine Fisheries Commission (Commission) adopted its first Fishery Management Plan (FMP) for Weakfish in 1985. Amendment 1 to the FMP (1992) unsuccessfully aimed to improve the status of Weakfish. Amendment 2 (1995) resulted in some improvement to the stock, but several signs indicated that further improvement was necessary. Thus, Amendment 3 (1996) was implemented to increase the sustainability of the fishery. Addendum I to Amendment 3 was approved in 2000 in order to extend the management program until the next amendment was implemented.

Amendment 4, approved in 2002, strives to establish two goals. One is the utilization of interstate management so that Atlantic coastal weakfish recover to healthy levels that will maintain commercial and recreational harvest consistent with a self-sustaining spawning stock. The second goal is to provide for restoration and maintenance of essential habitat (ASMFC 2002). The management objectives are to:

- 1) establish and maintain an overfishing definition which includes target and threshold fishing mortality rates and a threshold spawning stock biomass in order to prevent overfishing and to maintain a sustainable weakfish population;
- 2) restore the weakfish age and size structure to that necessary for the restoration of the fishery;
- 3) return weakfish to their previous geographic range;
- 4) achieve compatible and equitable management measures among jurisdictions throughout the fishery management unit, including states' waters and the federal EEZ;
- 5) promote cooperative interstate research, monitoring, and law enforcement necessary to support management of weakfish;
- 6) promote identification and conservation of habitat essential for the long term stability in the weakfish population; and
- 7) establish standards and procedures for both the implementation of Amendment 4 and for determination of states' compliance with provisions of the management plan.

Amendment 4 established target and threshold fishing mortality rates and a threshold spawning stock biomass level to determine overfishing and overfished stock status. The amendment requires states to implement recreational and commercial management measures to achieve annual fishing mortality targets. Some management measures are specified (e.g., minimum size limit, minimum mesh size, bycatch limit), while the Amendment provides the states flexibility in implementing other regulations (e.g., trip limits, area or season closures). States may request implementation of alternative management plans with conservationally equivalent measures.

States deemed to have insignificant landings were exempt from the recreational and commercial requirements, with the exception of the bycatch reduction device requirements.

The Commission adopted Addendum I to Amendment 4 (2005) to replace the biological sampling program in Section 3.0 of Amendment 4. In response to a significant decline in stock abundance and increasing total mortality since 1999, the Commission approved Addendum II to Amendment 4 (2007) to reduce the recreational creel limit and commercial bycatch limit, and set landings levels that when met will trigger a re-evaluation of management measures. Addendum III to Amendment 4 (2007) altered the bycatch reduction device certification requirements in Section 4.2.8 of Amendment 4 for consistency with the South Atlantic Fishery Management Council's Shrimp FMP. The Commission approved Addendum IV to Amendment 4 in 2009 to respond to the results of the 2009 benchmark stock assessment (additional information is provided in Section VI. Status of Management Measures and Issues).

Weakfish are managed under this plan as a single stock throughout their coastal range. All Atlantic coast states from Massachusetts through Florida and the Potomac River Fisheries Commission have a declared interest in weakfish, as do the US Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NOAA Fisheries). See Table 1 for a summary of state-by-state regulations in 2015.

## **II. Status of the Stock**

The most recent benchmark stock assessment, conducted in 2016, concluded that the weakfish stock was depleted and overfishing was not occurring (ASMFC 2016). A stock assessment update was completed in 2019 (ASMFC 2019), applying the Bayesian statistical catch-at-age model from the 2016 benchmark assessment to data through 2017. This update also incorporated the new, calibrated estimates of recreational catch by the Marine Recreational Information Program.

Estimates of recruitment, spawning stock biomass, and total abundance remained low in recent years. Estimates of fishing mortality were moderately high in recent years, although not near the time-series highs of the mid- to late-2000s, or the earliest years. Natural mortality remained high, averaging 0.92 in the most recent 10 years, compared to 0.16 over the first 10 years of the time series.

Spawning stock biomass in 2017 was estimated at 1,922 mt, below the SSB threshold of 6,170 mt, indicating the stock is depleted. SSB has shown a slight increasing trend in recent years, but is still well below the SSB threshold.

Total mortality in 2017 was estimated at 1.45, above both the Z target = 1.03 and the Z threshold = 1.43, indicating total mortality on the stock is too high.

### III. Status of the Fishery

In 2018, total coastwide landings of weakfish were 228,094 pounds, a 62% decline from 2017 and the lowest annual total harvest since 1981. The commercial fishery (102,492 lb) accounted for 45% of the total 2018 landings, and the recreational fishery (125,602 lb) for 55% (Table 2).

#### *Commercial Fishery*

Commercial data are cooperatively collected and compiled by the Atlantic Coastal Cooperative Statistics Program (ACCSP) and state fishery agencies from state mandated trip-tickets, landing weigh-out reports from seafood dealers, federal logbooks, shipboard and portside interviews, and biological sampling of catches. In this report, commercial landings from 2017 and earlier are from ACCSP and landings from 2018 are from state compliance reports, unless otherwise stated (see notes for Table 3).

Commercial harvest of weakfish peaked in 1980 at 36 million pounds, but has declined since then (Figure 2). Commercial landings have not exceeded 1 million pounds since 2004. Landings in 2018 were the lowest on record at 102,492 pounds. North Carolina (34%), New York (23%) and Virginia (22%) landed the largest shares of the 2018 coastwide commercial weakfish harvest (Table 3).

The dominant commercial gear type was gill nets (about 55% of commercial landings). There has been a shift in the dominant source of landings from trawls in the 1950s-1980s to gill nets in the 1990s-present. The majority of commercial landings tend to occur in the fall and winter months, presumably as the fish congregate to migrate to over-wintering grounds in the South Atlantic (Hogarth et al. 1995).

#### *Recreational Fishery*

Recreational catch statistics are collected by NOAA Fisheries. Effort data are collected through telephone interviews. Catch expansions are based on angler interviews and biological sampling conducted by trained interviewers stationed at fishing access sites. Recreational data from 2016 and earlier in this report are from the Fisheries Statistics Division of NOAA Fisheries, queried from the Marine Recreational Information Program (MRIP; 2019), except as noted in Section VI of this report for Florida's estimates. Some states also monitor and report recreational landings through their own sampling and estimation efforts. Recreational landings for 2018 are calculated from landings reported in state compliance reports.

Coastwide recreational landings peaked at 20 million pounds in 1987, but have generally declined since then through the present (Figure 2). Recreational landings have not exceeded 1 million pounds since 2008. In 2018, recreational landings were 125,602 pounds or 90,309 fish, the lowest harvest on record for both measurement units. North Carolina harvested the largest percentage of the 2018 recreational harvest (24% by pounds; 34% by numbers), followed by New Jersey (19%; 18%) and South Carolina (16%; 12%).

The number of fish released alive by anglers has typically been above 1 million fish since 1991. However in 2018, 860,599 fish were released, the lowest number of releases since the coastwide

one fish bag limit went into effect in 2010 (Table 6, Figure 3). North Carolina had the largest share of releases (35%), followed by Virginia (27%) and New York (14%).

The size of fish sampled to provide the MRIP weight estimates has historically varied in a latitudinal fashion, with larger fish caught in the north and smaller fish caught in the south. The mean weight per fish sampled throughout the recreational time series (1981-2018) is less than or equal to 1.5 pounds for all states from Florida through Virginia and over 1.5 pounds for all states north of Virginia. In 2018, the mean weights for fish caught in Delaware, North Carolina, South Carolina, Georgia, and Florida (2.36, 0.97, 1.86, 1.19, and 1.50 lb, respectively) were greater than or equal to each state's time series mean, and the mean weights for fish caught in Massachusetts, Connecticut, New York, New Jersey, and Virginia (1.92, 3.01, 2.16, 1.51, and 1.22 lb, respectively) were less than each state's time series mean.

The recreational fishery catches weakfish using live or cut bait, jigging, trolling, and chumming. The majority of recreationally harvested weakfish are caught in state waters (87% in 2018 by pounds).

#### **IV. Status of Assessment Advice**

The 2016 benchmark assessment was completed by the ASMFC Weakfish Stock Assessment Subcommittee (SAS) and peer reviewed by the ASMFC Weakfish Stock Assessment Review Panel (ASMFC 2016). The benchmark assessment includes fishery data and survey indices through 2014. An update to this assessment was conducted by the Weakfish TC in 2019, with data through 2017 and updated recreational catch estimates from the MRIP (ASMFC 2019).

As a result of the update, the Weakfish TC recommends maintaining the Z and SSB reference points as re-calculated by the update, along with a two-stage control rule for evaluating weakfish stock status and management response.

Under conditions of time-varying natural mortality, there is no long-term stable equilibrium population size, so an SSB target is not informative for management. The Weakfish TC recommends an SSB threshold of  $SSB_{30\%} = 6,170$  mt that is equivalent to 30% of the projected SSB under average natural mortality and no fishing. When SSB is below that threshold, the stock is considered depleted.

SSB in 2017 was estimated at 1,922 mt, below the SSB threshold of 6,170 mt, indicating the stock is depleted (Figure 1). SSB has shown a slight increasing trend in recent years, but is still well below the SSB threshold.

The TC recommends the use of total mortality (Z) benchmarks to prevent an increase in fishing pressure when F is low but M is high. When Z is below the Z target, F reference points can be used to assess overfishing status.

Total mortality in 2017 was estimated at 1.45, above both the Z target = 1.03 and the Z threshold = 1.43, indicating total mortality on the stock is too high (Figure 1).

## **V. Status of Research and Monitoring**

### *Fishery-Independent Data*

Young-of-year indices of relative abundance are provided by Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Florida. Massachusetts, Connecticut, New Jersey, Delaware, North Carolina, Georgia, and Florida provide age- 0+ or 1+ indices of relative abundance. The Northeast Fisheries Science Center Groundfish Trawl Survey also produces an age-structured index for the Mid-Atlantic coast, while the Southeast Area Monitoring and Assessment Program (SEAMAP) survey produces another index for the South Atlantic Coast. The Northeast Area Monitoring and Assessment Program (NEAMAP) began spring and fall surveys between Martha's Vineyard and Cape Hatteras in the fall of 2007, and provided an Age 1+ index which is included in the 2016 assessment. Stomach content analysis was also done to assess food habit changes and investigate the possible decrease in preferred food availability as a driver of natural mortality, however results were inconclusive. The Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAAP), which began in 2002, collects data on relative abundance, length, weight, age, sex, and trophic interactions in the Bay. See Table 7 for the indices provided in the 2019 compliance reports. While only the most recent years of data are shown, full data sets for each survey are available upon request to the state or Commission.

### *Fishery-Dependent Data*

The coastal states and the NMFS collect data on commercial and recreational landings. Addendum I to Amendment 4 requires the collection of otoliths and lengths to characterize the catch; the number of samples required is based on the magnitude of each state's fisheries. Each spring, the states are required to submit biological sampling plans, and each fall, through the compliance reports, the states are required to provide the actual sampling levels completed. See Section VII for more information.

## **VI. Status of Management Measures and Issues**

### *Fishery Management Plan*

Addendum IV to Amendment 4 was approved in November 2009, and was implemented in May 2010. In response to the 2009 stock assessment results, the addendum implements more appropriate biological reference points in response to recent stock dynamics and reduces harvest while attempting to minimize unnecessary bycatch waste. Addendum IV requires all states in the management unit (including those that are *de minimis*) to implement a recreational creel limit no greater than 1 fish, commercial trip and bycatch limits no greater than 100 pounds, and a finfish trawl fishery allowance for up to 100 undersized fish. The addendum adopted percentage based biological reference points with an overfished/depleted threshold of 20% SSB and a target of 30% SSB. The biological sampling requirements under Addendum I are

unchanged, and all regulations previously enacted to protect weakfish and reduce bycatch are to remain effective.

No additional amendments or addenda are under development.

#### *Florida Management Area and Landings Data*

In November 2009, the Management Board approved a proposal from Florida to reduce the state's weakfish management area to a small area in northeast Florida where pure weakfish are known to occur based on genetics data. The revision is intended to address the misidentification of weakfish, sand seatrout, silver seatrout, and their hybrids, and the consequential law enforcement issue. Inside the newly established weakfish management area (St. Mary's River only), any fish that resembles weakfish will be considered weakfish for enforcement purposes, both for commercial and recreational limits. Outside the weakfish management area, all fish that resemble weakfish will be considered sand seatrout.

As a result of the approved proposal, the commercial and recreational landings data provided in Florida's 2019 compliance report represent the best estimate of pure weakfish landings in the state. Commercial landings data from Florida's trip ticket program and recreational landings from the NMFS's Marine Recreational Fisheries Statistics Survey include only weakfish landed in Nassau and Duval counties, as revised on the basis of the genome proportions within the *Cynoscion*-complex found in the counties (48% weakfish in Nassau County and 17% in Duval County). The landings, tables, and figures in this report use the landings as reported by Florida.

#### *De Minimis Status*

Amendment 4 permits states to request *de minimis* status if, for the last two years, their combined average commercial and recreational landings (by weight) constitute less than 1% of the coastwide commercial and recreational landings for the same two year period. The *de minimis* threshold for the 2018 fishing year, calculated with 2017 and 2018 harvest data, is 4,125 pounds.

Three states requested *de minimis* status in their 2018 compliance reports: Massachusetts, Connecticut, and Florida. All three of these states qualify for *de minimis* status (0.9%, 0.9%, and 0.6%, respectively).

#### *Addendum II Management Triggers*

In 2010, the recreational and commercial management measures in Addendum IV replaced those in Addendum II. However, the Plan Review Team (PRT) will continue to include an evaluation of the two management triggers as they provide perspective on the magnitude of fishery landings (but hitting a trigger will not require Board reconsideration of the management measures).

Addendum II established two management triggers that would require the Board to consider modifying management measures if reached. First, commercial management measures are to be re-evaluated if coastwide commercial landings exceed 80% of the mean commercial landings



from 2000-2004, or 2.99 million pounds. Second, commercial and recreational management measures are to be re-evaluated if any single state's landings exceed its five-year mean by more than 25% in any single year.

The 2018 coastwide commercial landings are 102,492 pounds, thus the first trigger has not been exceeded. The second trigger was met in Florida because their total estimated landings in 2018 were 53% greater than their average total landings from 2014-2018 (Table 8). While Florida's landings are high relative to their average, they constitute less than 1% of total coastwide landings. Thus, the PRT does not find the 2018 Florida harvest to be a cause for concern.

## **VII. Implementation of FMP Compliance Requirements for 2018**

Mandatory compliance elements for 2018 were provided by Amendment 4 and its four addenda.

### *Regulatory Requirements*

The management program includes regulatory requirements for non *de minimis* states as follows:

- Recreational management measures including minimum size limits and a maximum creel limit of one fish (see Addenda II and IV to Amendment 4)
- Commercial management measures including minimum size limits, minimum mesh size limits, landings limits, trip limits, bycatch limits, closed seasons and areas, and bycatch reduction device requirements (see Section 4.2 of Amendment 4, and Addendum IV)

The PRT finds all states to have implemented the plan's compliance requirements.

See Table 1 for a summary of state commercial and recreational regulations in 2018.

### *Monitoring Requirements*

Addendum I implemented monitoring requirements for non *de minimis* states as follows:

- Maintenance of at least the 2005 level of recreational sampling of individual lengths through the Marine Recreational Fisheries Statistics Survey;
- Collection of six individual fish lengths for each metric ton of weakfish landed commercially;
- Collection of three individual fish ages for each metric ton of total weakfish landed, with a maximum of 1000 ages annually per state [Samples may come from commercial and/or recreational fishery as long as they come from the same general area (inshore versus offshore) that those fisheries are prosecuted in.

Table 9 provides the otolith and length collection requirements for 2018. These are based on the best available 2018 landings data provided to the Commission by the ACCSP, NMFS, and the states. The MRIP transition from evaluating effort via the Coastal Household Telephone Survey to the new, mail-based Fishing Effort Survey (FES) impacted recreational catch estimates and sampling requirements based on those estimates. Therefore, while sampling efforts are

compared to requirements based on the FES (Table 9), the PRT will use discretion in recommending compliance based on age sample collection. Current and future sampling efforts (2019 and beyond) should be based on recreational harvests estimated using the FES. All states except New York, New Jersey, and North Carolina met the biological sampling requirements in 2018, as reported in state compliance reports.

New York collected 28 fewer ages than their required 78 ages and collected 50 fewer lengths than their required 100 lengths. This is the third consecutive year that New York has not fulfilled sampling requirements for lengths and the first year that they have not fulfilled the sampling requirement for ages. The PRT recognizes the difficulty in acquiring weakfish samples and has no reason to believe that this state is neglecting efforts to fulfill the requirements of the FMP. However, given the consecutive years of not meeting requirements for length samples, the PRT would encourage greater efforts from New York to fulfill this requirement in the future.

New Jersey collected 170 fewer ages than their required 314 ages. Weakfish recreational harvest in New Jersey for 2017 was significantly higher than other recent years at 225,225 pounds (by contrast the next highest year within the last five years was 61,426 pounds in 2014). With a 2018 recreational harvest that was roughly 10% of the year on which requirements were based, there is reasonable expectation that this state would be unable to meet its age sampling requirement. Although they did not meet the required amount, collection of 144 age and length samples indicates a significant effort towards fulfilling the requirement.

North Carolina collected 22 fewer ages than their required 192 ages. Weakfish harvest in North Carolina for 2018 was significantly lower than most years and their lowest harvest on record, which likely made sample acquisition more difficult. Additionally, the MRIP transition increased North Carolina's recreational harvest estimate (in pounds) by approximately three times, also increasing the number of samples required. Given the timing of the transition relative to sample collections and the small margin of missing the requirement, the PRT has no reason to believe that North Carolina did not put forth appropriate effort to meet their sampling requirement and does believe that North Carolina will likely meet this requirement in future years.

Given the difficulty of obtaining weakfish samples and efforts made by New York, New Jersey, and North Carolina, the PRT does not recommend that any of these states be found out of compliance for failing to meet sampling requirements in 2018.

## **VIII. Recommendations of the Plan Review Team**

### *Management Recommendations*

- That the Board approve the *de minimis* requests from Massachusetts, Connecticut, and Florida.
- That the Board consider for management the use of biological reference points from the 2019 stock assessment update.
- That the Board consider updating management triggers established in Addendum II to Amendment 4.

- That the Board consider updating age sampling requirements to reflect the update to MRIP data.

### *Research Recommendations*

#### Fishery-Dependent Priorities

##### High

- Increase observer coverage to identify the magnitude of discards for all commercial gear types from both directed and non-directed fisheries.<sup>1</sup>

##### Moderate

- Continue studies on temperature, size, and depth specific recreational hook and release mortality rates, particularly catches from warm, deep waters. Investigate methods to increase survival of released fish.
- Continue studies on mesh size selectivity, particularly trawl fisheries.<sup>2</sup>
- Improve methods to estimate commercial bycatch. Refine estimates of discard mortality based on factors such as distance from shore and other geographical differences for all sizes including below minimum size.

##### Low

- Determine the onshore versus offshore components of the weakfish fishery.
- Collect catch and effort data including size and age composition of the catch, determine stock mortality throughout the range, and define gear characteristics. In particular, increase length frequency sampling in fisheries from Maryland and further north.
- Develop latitudinal, seasonal, and gear-specific age-length keys coast wide. Increase sample sizes for gear specific keys.

#### Modeling / Quantitative Priorities

##### High

- Evaluate predation of weakfish with a more advanced multispecies model (e.g., the ASMFC MSVPA or Ecopath with Ecosim); consider an expanded suite of predators (e.g., marine mammals) and include weakfish as predator and prey.
- Develop a bioenergetics model that encompasses a broader range of ages than Hartman and Brandt (1995) and use it to evaluate diet and growth data.

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<sup>1</sup> Some Mid-Atlantic trawl fleet observer coverage has been implemented under ACCSP funding.

<sup>2</sup> Gillnet selectivity has been investigated by Swihart et al (2000). Some gear selectivity information in Amendment 3 to the ASMFC Weakfish FMP. Information can also be obtained from the North Carolina Pamlico Sound Independent Gill Net Survey.

## Life History, Biological, and Habitat Priorities

### High

- Develop a coastwide tagging program to identify stocks and determine migration, stock mixing, and characteristics of stocks in over wintering grounds. Determine the relationship between migratory aspects and the observed trend in weight at age.<sup>3</sup>
- Estimate weakfish mortality through independent approaches (e.g., alternative models, tagging) to corroborate trends in mortality from the assessment model.
- Determine the impact of scientific monitoring surveys on juvenile weakfish mortality. Calculate the resulting impact on adult stock size.
- Monitor weakfish diets over a broad regional and spatial scale, with emphasis on new studies within estuaries.
- Continue to investigate the geographical extent of weakfish hybridization.

### Moderate

- Identify and delineate weakfish spawning habitat locations and environmental preferences to quantify spawning habitat.
- Compile data on larval and juvenile distribution from existing databases to obtain indications of spawning and nursery habitat location and extent.
- Examine geographical and temporal differences in growth rate (length and weight at age).
- Determine the impact of power plants and other water intakes on larval, post larval, and juvenile weakfish mortality in spawning and nursery areas. Calculate the resulting impact on adult stock size.<sup>4</sup>
- Monitor predation on weakfish from bird, fish, and marine mammal species.

## Management, Law Enforcement, and Socioeconomic Priorities

### Moderate

- Assemble socioeconomic data as it becomes available from ACCSP.

### Low

- Define restrictions necessary for implementation of projects in spawning and over wintering areas and develop policies on limiting development projects seasonally or spatially.

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<sup>3</sup> A university led weakfish tagging study has been ongoing in North Carolina and Delaware since 2014. The objective of the study is to evaluate movement and stock mixing of weakfish along the U.S. east coast and to estimate seasonal and annual rates of fishing and natural mortality. The study is slated to be completed in late 2017 with results available to the weakfish TC in early 2018.

<sup>4</sup> Data are available for power plants in the Delaware Bay area and North Carolina. Also see Heimbuch et al. 2007. Assessing coastwide effects of power plant entrainment and impingement on fish populations: Atlantic menhaden example. *North American Journal of Fisheries Management*. 27: 569-577.

## IX. References

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**X. Tables**

**Table 1. Summary of state regulations for weakfish in 2018.**

	<b>Commercial</b>	<b>Recreational</b>	<b>Implementation Date</b>
MA	16", open 1/1-12/31, 100 lb possession limit.	16", 1 fish	June 2010
RI	16"; open 6/1-6/30 & 8/7-11/8, 100 lb possession limit. Other times of year: 100 pound bycatch limit with at least an equal poundage of other species as weakfish. Trawl codend mesh size $\geq 4.5$ " diamond or 4.0" square.	16", 1 fish	April 28, 2010
CT	16"; open 1/1-12/31, 100 lb possession limit.	16", 1 fish	April 25, 2010
NY	16" (12" dressed & 10" filleted); Hook and line open 4/1-6/24 & 8/28-11/15; 0 lb bycatch limit. All other gears open 4/1-6/24 and 8/28-11/15; 100 lb bycatch limit.	16" (12" dressed, 10" fillet), 1 fish	By May 1, 2010
NJ	Gill net: 13"; open 1/1-5/20 & 9/3-10/19 & 10/27-12/31, 100 lb possession limit; mesh $\geq 3.25$ " stretched except 2.75 - 3.25" allowed within 2nm for permitted fishermen doing monthly reporting. Otter trawl: 13"; open 1/1-7/31 & 10/13-12/31, 100 lb possession limit; mesh $\geq 3.75$ " diamond or 3.375 square. Pound net: 13"; open 1/1-6/6 & 7/1-12/31, 100 lb possession limit. 100 lb bycatch limit & 50% rule. Hook & line: 13", 1 fish, open 1/1-12/31.	13", 1 fish	March 25, 2010
DE	Gill net: 12"; only nets with stretch mesh $\geq 3.125$ " allowed in water 4/1-6/30, none permitted weekends and legal holidays 5/10-9/30, 100 lb possession limit. Drift gill net: open 1/1-12/31 except 34 specified days of gear out of water in May and June. Anchor gill net: open 1/1-5/9 and 10/1-12/31, otherwise gear out of water. Hook & line: 13"; 100 lb possession limit 4 days/week during 5/1-10/31, 1 fish creel limit all other times.	13", 1 fish	April 11, 2010
MD	12". Ocean all gears: 100 lb bycatch limit & 50% rule. Chesapeake Bay hook & line: open 8/1-9/30, 50 lb possession limit, 0 lb bycatch. Chesapeake Bay all other gears: 50 lb bycatch limit & 50% rule. Gillnet: mesh $\geq 3.0$ " stretched. Trawl: mesh $\geq 3.375$ " square or 3.75" diamond.	13", 1 fish	June 28, 2010
PRFC	12"; open 7/28-12/31, 50 lb possession limit; 50 lb bycatch limit & 50% rule for certified pound nets with approved cull panels, and 0 lb bycatch for all other gears. Pound net: limited entry.	12", 1 fish	January 1, 2010

**Table 1. (continued)**

State	Commercial	Recreational	Implementation Date
VA	Gill net: 12"; open 3/16-5/13 & 10/21-12/30, 100 lb possession limit. Pound net: no minimum size; limited entry; open 4/1-4/30 & 5/23-9/12 unless exempted by license forfeit, 100 lb possession limit. Haul seine: no minimum size; open 4/16-6/10 & 8/21-9/24, 100 lb possession limit. Out of state trawl: 12" except 100 undersized fish allowed; open 4/1-9/25, 100 lb possession limit; codend mesh $\geq$ 3.0". Hook & line: 12"; open 1/1-12/31, 100 lb possession limit. 100 lb bycatch limit (per vessel), 50% rule for all gears during closed seasons.	12", 1 fish	May 1, 2010
NC	12", except 10" for long haul seines & pound nets in internal waters 4/1-11/15; open 1/1-12/31, 100 lbs trip limit. Gill net: mesh $\geq$ 2.875" stretch. Gill nets and flynets that do not meet mesh requirements can only take weakfish as bycatch provided the weight of weakfish doesn't exceed 50% of catch up to 100lbs, 100lb limit in shrimp or crab trawl. BRDs in shrimp trawls.	12", 1 fish	August 20, 2010
SC	12", 1 fish. BRDs in shrimp trawls.	12", 1 fish	July 1, 2010
GA	13", 1 fish. BRDs in shrimp trawls.	13", 1 fish	June 3, 2010
FL	12", 100 lb possession limit. BRDs in shrimp trawls.	12", 1 fish	July 27, 2010

**Table 2. Commercial and recreational Atlantic coast weakfish landings from 2009 to 2018** (see Tables 3 and 4 for source information and state-specific landings).

Year	Recreational Landings (lbs)	Commercial Landings (lbs)	Total Landings (lbs)	% Com
2009	429,684	328,923	758,607	43%
2010	173,352	152,971	326,323	47%
2011	102,754	110,528	213,282	52%
2012	671,631	211,489	883,120	24%
2013	466,930	309,775	776,705	40%
2014	218,581	179,133	397,714	45%
2015	451,266	129,819	581,085	22%
2016	228,857	151,047	379,904	40%
2017	436,042	159,464	595,506	27%
2018	125,602	102,492	228,094	45%



**Table 3. Commercial landings (pounds) of weakfish by state, 2009-2018** (Source: ACCSP for 2017 and earlier and state compliance reports for 2018, except as noted below). “C” values are confidential.

Year	MA	RI	CT	NY	NJ	DE	MD
2009	C	6,286	506	101,561	30,196	C	5,230
2010	58	5,400	960	13,102	12,053	C	2,930
2011	615	5,766	2,105	17,136	13,324	C	646
2012	616	17,908	4,723	63,119	19,291	C	2,078
2013	3,400	31,826	5,960	108,656	14,829	C	3,344
2014	918	15,583	3,343	33,303	8,415	C	2,126
2015	473	6,327	1,666	24,487	9,655	C	1,394
2016	882	12,022	2,731	30,714	6,596	C	914
2017	2,175	17,243	3,956	36,671	5,875	C	858
2018	1,190	8,785	2,004	23,070	7,693	800	555
	PRFC	VA	NC	SC	GA	FL	Total
2009	17	18,202	163,146			453	328,923
2010	80	11,996	106,319			73	152,971
2011	45	4,386	65,897		C	608	110,528
2012	98	10,274	91,383			1,999	211,489
2013	24	20,484	120,188		C	1,065	309,775
2014	10	9,633	105,246			557	179,133
2015	3	4,843	80,230			741	129,819
2016		12,610	83,958			621	151,047
2017	5	5,560	85,442			1,680	159,464
2018	0	22,882	35,133	0	0	381	102,492

**Notes:** FL: state-reported landings (NMFS-reported landings limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex in those counties' waters). VA: ACCSP-reported landings minus the PRFC-reported harvest landed in VA for 2016 and earlier; state-reported landings minus the PRFC-reported harvest landed in VA for 2017. PRFC: agency-reported landings (fish caught in Potomac River and landed in MD and VA). MD: ACCSP-reported landings minus the PRFC-reported harvest landed in MD for 2016 and earlier; state-reported landings minus the PRFC-reported harvest landed in MD for 2017.

**Table 4. Recreational landings (pounds) of weakfish by state, 2009-2018** (Source: MRIP FES-calibrated estimates, except as noted below).

Year	MA	RI	CT	NY	NJ	DE	MD
2009				0	51,251	16,812	5,611
2010	0			6,526	8,435	121	6,476
2011				164	6,845	27	241
2012				43,385	373,328	11,621	42,885
2013		4,063		85,934	226,756	21,522	7,539
2014			0	14,916	61,426	7,118	2,808
2015				5,852	53,485	2,293	68,225
2016	571		4,240	29,573	26,616	3,601	1,947
2017	3,108		0	20,962	225,225	2,385	5,926
2018	756	0	1,404	19,593	24,407	4,199	0
		VA	NC	SC	GA	FL	Total
2009		71,511	245,358	22,740	14,449	1,952	429,684
2010		11,416	103,903	29,554	6,466	455	173,352
2011		14,185	62,543	17,028	1,191	530	102,754
2012		51,999	95,952	45,528	6,265	668	671,631
2013		4,657	66,720	45,031	3,771	937	466,930
2014		26,220	70,988	28,773	5,570	762	218,581
2015		66,528	157,269	96,416	1,096	102	451,266
2016		44,242	83,702	29,448	4,264	653	228,857
2017		15,649	55,944	58,510	47,776	557	436,042
2018		6,788	29,924	19,930	16,492	2,109	125,602

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters.

**Table 5. Recreational landings (numbers) of weakfish by state, 2009-2018** (Source: MRIP FES-calibrated estimates, except as noted below).

Year	MA	RI	CT	NY	NJ	DE	MD
2009				0	23,217	9,417	9,655
2010	0			7,894	3,943	144	12,532
2011				106	8,393	34	284
2012				12,895	276,856	11,077	38,598
2013		737		20,659	89,805	16,325	3,736
2014			0	1,838	16,146	6,624	1,542
2015				2,123	73,062	1,511	12,567
2016	327		1,601	4,626	12,344	1,440	2,100
2017	1,880		0	16,534	78,831	1,365	9,175
2018	393	0	466	9,086	16,177	1,782	0
		VA	NC	SC	GA	FL	Total
2009		59,169	204,814	28,583	27,325	2,028	364,208
2010		12,745	110,770	33,968	6,752	589	189,337
2011		18,999	48,727	17,834	1,796	471	96,644
2012		46,275	96,947	51,947	7,436	988	543,019
2013		4,336	63,090	28,117	4,407	2,086	233,298
2014		32,380	71,912	24,733	7,896	905	163,976
2015		10,286	143,543	74,085	1,673	143	318,993
2016		37,664	77,341	22,843	5,328	1,251	166,865
2017		14,405	51,795	45,836	55,471	848	276,140
2018		5,556	30,935	10,705	13,805	1,404	90,309

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters).

**Table 6. Recreational releases (numbers) of weakfish by state, 2009-2018** (Source: MRIP FES-calibrated estimates, except as noted below). Atlantic coastal releases that occurred outside the management area (ME-NH) are included in the Total though not shown at the state level.

Year	MA	RI	CT	NY	NJ	DE	MD
2009				6,702	205,284	10,106	29,705
2010	1,853			6,799	240,108	42,070	417,219
2011				118,616	288,439	13,584	50,974
2012				29,613	1,383,894	212,573	72,092
2013		32,344		18,652	330,665	51,611	19,847
2014			724	794	193,962	55,077	27,392
2015				14,459	598,126	33,522	340,850
2016	4,130		1,932	8,767	278,043	62,864	161,159
2017	557		791	138,156	146,036	38,219	41,674
2018	8,072	1,139	2,206	124,349	40,600	26,657	5,029
		VA	NC	SC	GA	FL	Total
2009		168,214	494,626	112,183	29,232	285	1,056,337
2010		532,657	739,955	123,236	18,048	38	2,121,983
2011		743,528	374,910	19,138	21,044	520	1,630,753
2012		273,507	381,441	332,241	85,553	0	2,770,914
2013		205,203	252,362	23,534	21,012	561	955,791
2014		374,944	1,067,230	568,787	7,640	614	2,297,164
2015		232,363	1,608,036	215,117	48,052	0	3,090,525
2016		1,467,470	1,091,422	118,374	16,152	0	3,210,313
2017		454,456	351,433	186,547	95,061	0	1,452,930
2018		233,912	300,195	85,941	31,987	512	860,599

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters).

**Table 7. Indices of relative weakfish abundance from 2009 to 2018.** (Source: State compliance reports)

Year	MA Tr BB & VS YOY	MA Tr BB & VS 1+	RI Tr Coast YOY	CT Tr LIS YOY	CT Tr LIS 1+	NY Tr Coast YOY	NJ Tr DE Bay YOY	NJ Tr Ocean 1+	DE Tr DE Bay YOY	DE Tr Inland YOY	DE Tr DE Bay 1+
	mean#/ tow	mean#/ tow	mean #/ tow	GM#/ tow	GM#/ tow	AM#/ tow	GM#/ tow	GM#/ tow	GM#/ tow	GM#/ tow	#/ nm
2009			7.29	6.48	0.30	13.30	7.29	0.33	8.56	5.91	35.83
2010			7.95			15.30	10.51	0.69	11.98	3.49	43.57
2011			70.63	11.64	0.68	34.50	15.80	22.32	7.89	3.30	89.22
2012			122.30	21.96	0.73	9.40	1.26	0.23	7.55	3.44	106.43
2013			13.20	7.01	0.52	22.60	15.55	0.39	13.49	4.47	71.78
2014			1.27	41.53	0.08	97.70	4.87	0.98	13.67	4.71	38.01
2015	0.21		46.47	30.91	0.46	56.00	2.27	1.44	10.22	3.88	76.46
2016	23.00	0.29	4.14	5.87	0.81	57.60	2.34	1.34	7.47	3.00	154.40
2017	0.30	0.00	32.25	8.20	0.43	59.20	4.13	3.74	5.18	1.44	101.98
2018	3.89	0.03	60.85	25.66	0.56	139.90	7.19	2.67	6.92	2.45	133.19

**Table 7 (continued). Indices of relative weakfish abundance from 2000 to 2017.** (Source: State compliance reports)

Year	MD Tr ChesBay YOY	MD Tr Coast YOY	VA Tr ChesBay YOY	NC Tr Pamlico YOY	NC Tr Pamlico YOY	NC Gn Pamlico 1+	SC Tr Inshore YOY	SC SEAMAP Summer 0+/1+	SC SEAMAP Fall 0+/1+	GA Tr Coast 0+	FL Tr Jax YOY	FL Tr IR & Jax 1+
	GM#/tow	GM#/ha	GM#/tow	#/tow	#/tow	#/set	#/tow	#/tow	#/tow	#/obs hr	med/tow	med/tow
2009	1.42	1.33	6.18	58.89		0.31		15.30	11.90	104.76	2.12	1.17
2010	1.68	2.16	14.11	32.45		0.48		14.80	14.60	128.48	0.74	0.70
2011	2.04	1.90	5.23	33.69		0.36		74.10	13.90	104.20	0.74	0.52
2012	0.46	0.46	3.02	40.66		0.92		18.80	9.80	91.64	1.79	0.65
2013	2.15	1.02	9.41	58.53		0.69		25.50	0.20	131.52	0.69	0.12
2014	2.95	1.28	3.77	32.83		0.50		12.00	7.60	64.16	0.62	0.19
2015	2.23	0.88	3.77	43.30		0.30	19.30	18.20	257.80	89.84	1.08	0.03
2016	0.71	1.69	1.44	43.00	34.50	0.30	22.60	14.50	24.30	62.40	0.69	0.21
2017	0.65	0.54	2.41	41.90	19.10	0.31	26.60	1.46	5.73	44.30	0.49	0.27
2018	1.03	1.48		16.68		0.23				94.90	0.00	0.23

**Table 8. Evaluation of the Coastwide Management Trigger** (Section 3.3.1 of Addendum II to Amendment 4): percent change of each state’s 2018 total landings (lbs) to its five-year (2014-2018) mean total landings.

	MA	RI	CT	NY	NJ	DE	MD
2014-2018	2,015	11,992	3,869	47,828	85,878	4,079	16,951
2018	1,946	8,785	3,408	42,663	32,100	4,999	555
% change	-3%	-27%	-12%	-11%	-63%	23%	-97%
	PRFC	VA	NC	SC	GA	FL	
2014-2018	6	42,991	157,567	46,615	15,040	1,633	
2018	0	29,670	65,057	19,930	16,492	2,490	
% change	-100%	-31%	-59%	-57%	10%	53%	

**Table 9. Biological sampling of weakfish in 2018, Massachusetts-Florida** (Sampling requirements are based on Addendum I to Amendment 4 and 2018 landings data and are reported in state compliance reports. Values highlighted with red bold font do not meet sampling requirements).

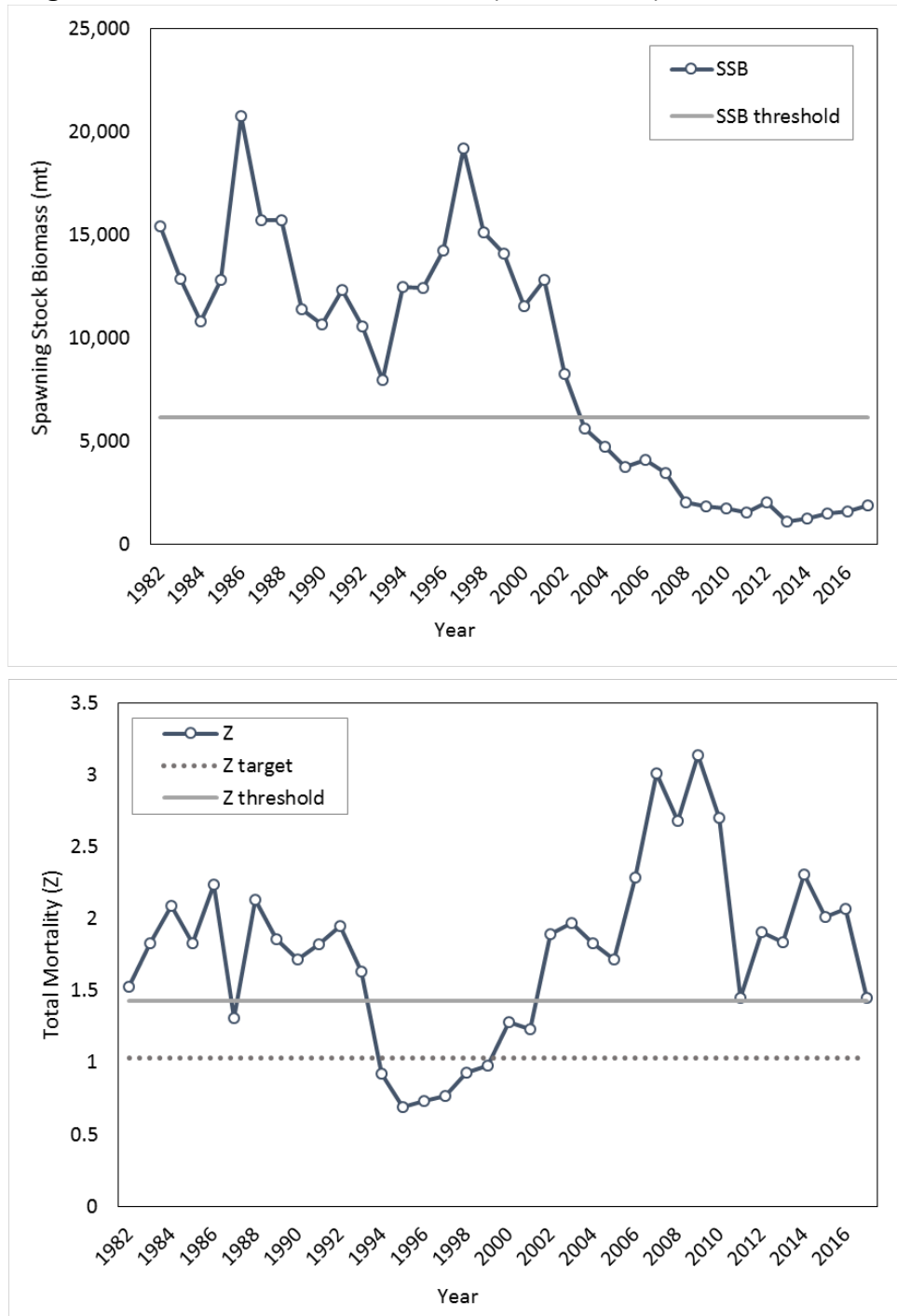
	Samples Required		Samples Completed		Fisheries Sampled
	Ages	Lengths	Ages	Lengths	
MA*	7	6	0	0	NA
RI	23	47	38	93	commercial, RIDFW Trawl Survey
CT*	5	11	0	0	NA
NY	78	100	50	50	commercial (GN, TR, PN, H&L)
NJ	314	16	144	144	commercial, recreational
DE	5	4	0	0	commercial (GN)
MD	9	2	15	16	commercial (PN)
PRFC	0	0	0	0	NA
VA	29	15	289	3,009	commercial (GN, PN, HS), recreational
NC	192	233	170	804	commercial (SN, GN, PN, HS, TR, H&L), recreational
SC	80	0	80	700	fishery independent (additional samples from fishery-dependent sources)
GA*	65	0	5	5	recreational
FL*	3	5	0	0	NA

\**de minimis* in 2018; not required to conduct sampling; sample numbers provided to show from what states were exempt

NA=not applicable, GN= gill net, PN=pound net, H&L=hook and line, HS=haul seine, SN=sink net

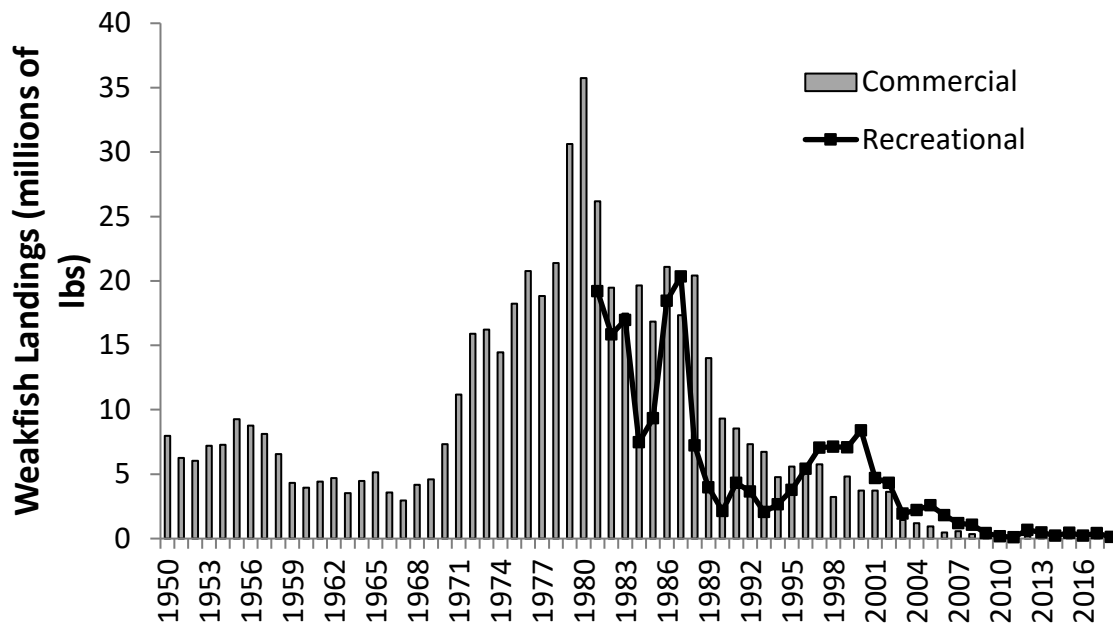
## XI. Figures

**Figure 1. Spawning stock biomass (top) and total mortality (bottom) plotted with their respective targets and thresholds, where defined (ASMFC 2019).**





**Figure 2. Commercial and recreational weakfish harvest (pounds), from 1950 to 2018** (see Tables 3 and 4 for source information and values). Recreational data is unavailable prior to 1981.



**Figure 3. Recreational weakfish harvest and releases (number of fish), from 1981 to 2018** (see Tables 5 and 6 for source information and values).

